

## Nutritional supplements, leptin, insulin and progesterone in female Australian Cashmere goats

### ABSTRACT

In small ruminants, reproductive wastage due to early embryo mortality is a major industry issue because it reduces reproductive efficiency and limits productivity. In sheep, early embryo mortality appears to be caused by reductions in progesterone concentrations when animals are over-fed, but this concept has not been studied in goats. Therefore we tested whether a supplement of lupin grain affects circulating progesterone concentrations in Cashmere goats during non-breeding season. We allocated 23 females into two groups: Controls were fed to ensure maintenance of body mass (85% chaff, 15% lupins head daily); Supplemented goats were fed twice their daily requirements for maintenance. All animals were anovulatory and treated with CIDRs to supply exogenous progesterone at a relatively constant rate. Nutritional treatments lasted for 18 days, and coincided with the presence of CIDRs. Leptin and insulin concentrations were increased ( $p < 0.05$ ) by supplementation, but progesterone concentrations did not significantly differ between groups at any time during the experiment. We conclude that a dietary supplement that elicits major changes in energy homeostasis does not reduce progesterone concentrations in goats and is thus unlikely to affect embryo mortality.

**Keyword:** Metabolic hormones; Lupin grain; Embryo mortality